3.3 Solve and Graph Absolute Value Inequalities

**Just like absolute value equations, we cannot solve until the ABSOLUTE VALUE IS BY ITSELF!

**When the absolute value is by itself:

- > or ≥ mean OR
- < or ≤ mean And

Things to remember:

1. * The absolute value must be by itself before you can solve! *
   a. That also means before you write your two inequalities
2. When you write your two equations, change the sign of the number and flip the inequality sign.

Ex 1) Solve and graph.

$|v+4| \le 2$

$v+4 \le 2$ and $v+4 \ge -2$

$-4 \quad -4 \qquad -4 \quad -4$

$v \le -2$ and $v \ge -6$

$-6 \le v \le -2$

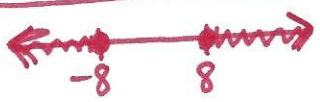
$-9\left|\frac{k}{8}\right| \le -9$

$-9 \quad -9$

$\left|\frac{k}{8}\right| \ge 1$

$8 \cdot \frac{k}{8} \ge 1 \cdot 8$ OR $8 \cdot \frac{k}{8} \le -1 \cdot 8$

$k \ge 8$ OR $k \le -8$



$-5|-5r-4|-2 > -82$

$+2 \quad +2$

$\frac{-5|-5r-4|}{-5} > \frac{-80}{-5}$

$|-5r-4| < 16$

$-5r-4 < 16$ and $-5r-4 > -16$

$+4 \quad +4 \qquad +4 \quad +4$

$\frac{-5r}{-5} < \frac{20}{-5} \qquad \frac{-5r}{-5} > \frac{-12}{-5}$

$r > -4$ and $r < \frac{12}{5}$

$-4 < r < \frac{12}{5}$

$\frac{|n+6|}{2} > 2 \cdot 2$

$|n+6| > 4$

$n+6 > 4$ OR $n+6 < -4$

$-6 \quad -6 \qquad -6 \quad -6$

$n > -2$ OR $n < -10$